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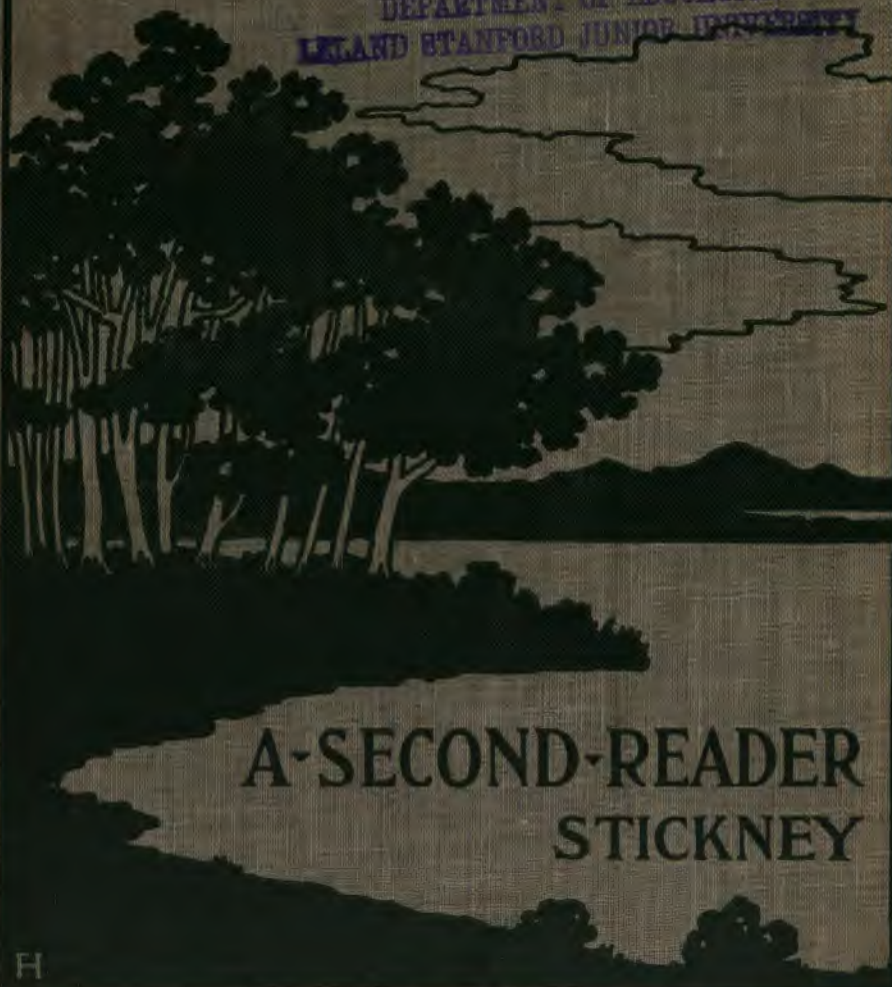


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HISTORY · NATURE · READERS

EARTH AND SKY

DEPARTMENT OF EDUCATION
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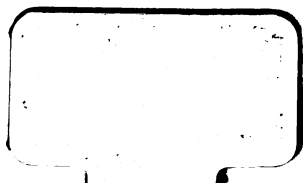


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STUDY AND STORY NATURE READERS

EARTH AND SKY

NUMBER II

*A Second and Third Grade
Nature Reader and Text-Book*

BY

J. H. STICKNEY

AUTHOR OF STICKNEY'S READERS, "EARTH AND SKY, NUMBER I"
"PETS AND COMPANIONS," "BIRD WORLD"

BOSTON, U.S.A., AND LONDON

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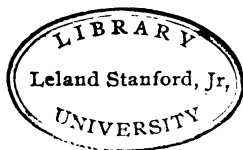
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C



PREFACE

THIS book is a natural sequel to Number I of the same series. The object is the same: to bring before children's minds their own relation to the natural world in such a way as to appeal to imagination and reflection.

To gain access to a schoolroom a text-book should pass two tests: to increase useful knowledge and to give healthful pleasure. The lines of thought in the present volume aim to answer to both of these, and to awaken spontaneous observation which shall distinctly add to the enjoyment of life at a time when impressions are most lasting.

As was implied in the preface to the earlier book, it is expected that the teacher will be its "better half," supplying what is needful to make connection with the experience of the reader, and welcoming opportunities offered for timely teaching which the book can only suggest.

Number I has been adopted into the curriculum of a good number of towns and cities; it is hoped that this one may be thought worthy to follow it and prepare the way for still further teaching along these comprehensive lines.

Below are phrases which summarize points of contact which the readings make with the natural world :

Voice and speech in everything in nature.

Beginnings of experience in every little child.

Needs that earth and sky must meet.

Nature with and without man's help and control.

Mutual dependence of human beings ; blessings of work and service.

Social life in its bearing on conduct and character ; human institutions.

The term of life ; the passing on of knowledge and attainment from parents to children.

Attention is invited to the following very simple lessons in their development of these thoughts.

J. H. S.

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LANGUAGE

THE language work of Number I moved along the lines of five forms of sentence idioms.

What is it?

What has it?

What does or can it do?

Exclamation or command.

What is it like?

Very pleasant little stories grew out of the use of these forms of challenge.

Example.— See these flowers! They are buttercups. The petals are as yellow as butter. Buttercups grow in the fields. The cups have six petals.

As no limit is put upon the length of sentences, the plan may be made equally profitable in this book.

A further stage is the *combination* of sentences. This calls into use the simple conjunctions, and later conjunctive adverbs and relative pronouns.

The technical side must run lightly. Following a natural speech habit, the teacher encourages a child by adding *and* after a child's simple utterance, or *but*; something is sure to follow, and a new plan is inaugurated. A list of these conveniences of speech placed

upon the school blackboard will make welcome bridges into new territories of expression. There is not a lesson in the following pages that will not easily lend itself to this kind of language work. They were made with reference to it.

The only other special item recommended at this stage is the distinguishing of the two parts of every sentence, — the subject and predicate.

They answer two questions :

1. Of what is thus and thus said ?
2. What is said of thus or thus ?

Caution is to be exercised never to ask these in a case of doubt of ability to answer. The division is made as a help to clearness of thought, and the teacher had better tell than ask, if there is liability to confusion.

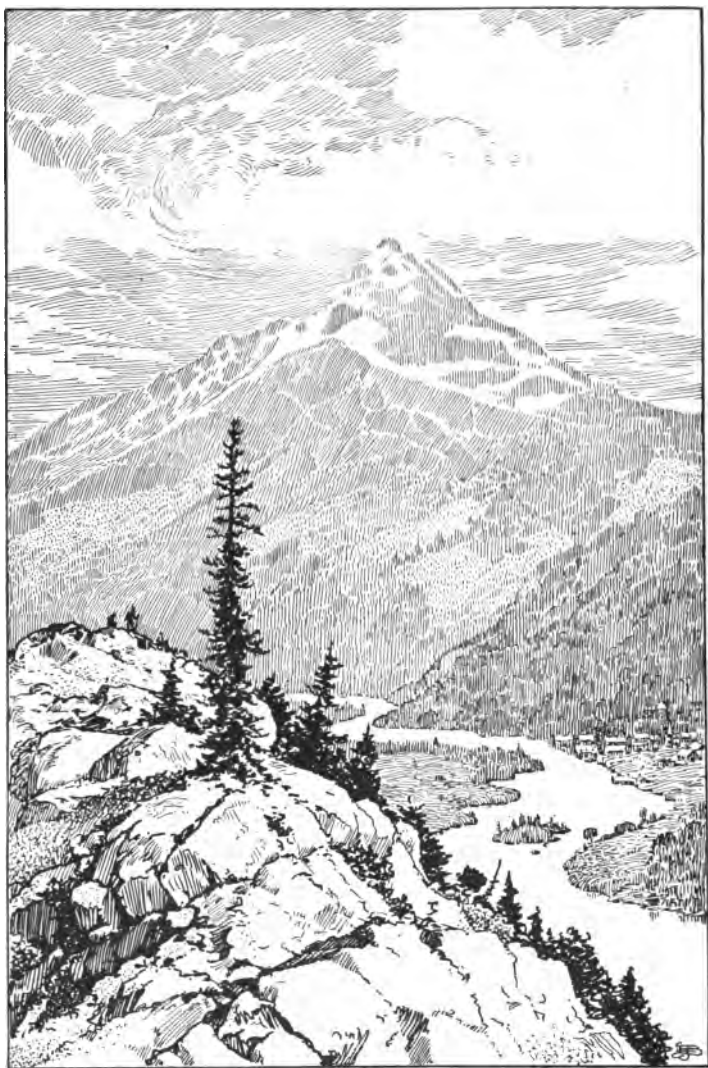
In written work, marks of punctuation will be most effectively taught if made incidental to clearness.

"Is the sentence finished? Then how shall we show that it is?"

Reasons for commas will commend themselves in most instances, either as marking natural pauses or (parenthetical, or other) inverted arrangement.

The above and the use of the capital, the effective use of margins, and good handwriting will be found sufficient attainment at this stage.





A GLIMPSE OF EARTH AND SKY

EARTH AND SKY

NUMBER TWO

I. INTRODUCTION

ON the last page of the first "Earth and Sky" there were some verses by Longfellow about an Indian boy called Hiawatha.

They tell how, sitting at the door of his tent on summer evenings, he listened to "sounds of music, sounds of wonder!" These sounds were the whispering of the wind in the pine trees, and the lapping flow of the water in the running brooks. As nearly as the boy could imitate them, the trees sang "Minne-wawa," and the swish of the water called "Mudway-aushka, Mudway-aushka!" Did *you* ever hear such voices in the trees, and in the brooks?

When this boy had grown up, the story says, a singer named Nawadaha made songs about him, telling

Of his wondrous birth and being—
How he prayed and how he fasted,
How he lived and toiled and suffered,
That the tribes of men might prosper.

We think that one reason why he became so strong and good was because he loved the sunshine of the meadow, and the shadow of the forest, loved the wind among the branches, and the rain shower and the snowstorm, loved the rushing of great rivers and the thunder in the mountains. Yes, and all the beautiful sights and sounds of earth and sky.

This book begins where that one left off, and tells you first of a Norse boy who loved the same things.

II. WHAT OYVIND LEARNED

OYVIND's mother told him how once everything could talk: the mountain to the brook, and the brook to the river, and the river to the sea, and the sea to the sky.

He asked if the sky did not talk to any one, and was told that it talked to the clouds, and the clouds to the trees; the trees talked to the grass, and the grass to the flies, the flies to the beasts, and the beasts to the children; but the children to grown people, and thus it went on until it had gone round a circle, and no one knew where it had begun.

Oyvind gazed long at the cliff, the trees, the sky, and the sea. He felt that he had never truly seen them before.

The cat came out just then and sat upon the doorstep in the sunshine. "What does the cat say?" asked Oyvind.

The mother sang:

Evening sunshine softly is dying,
On the doorstep lazy puss is lying.

Two small mice, cream so thick and nice,
Four small bits of fish stole I from a dish;
Well-filled am I and sleek. Am very sleepy and
meek,

says the pussy.

Two small birds sat singing on the gable.
“What are the birds saying?” asked Oyvind
and laughed.

Dear Lord, how pleasant is life
For those that have neither toil nor strife,

say the birds.

Thus he learned what all were saying, even
to the ant crawling in the moss, and the worm
working in the bark.

BJÖRNSSON.

III. HOW RUDY LEARNED TO CLIMB

"COME out upon the roof with me," the cat had said to Rudy very distinctly and intelligently many times.

Young children, before they speak themselves, can understand animals very well. Some children keep this intelligence longer than others.

"Come out upon the roof with me, Rudy," was about the first thing that the cat had said, and Rudy understood long before he answered.

"All that people say about falling down is mere fancy; *you will not fall unless you are afraid.* Come on! Put one of your paws here and the other there; then feel with your fore paws. You must use your eyes, and be active with your limbs. If you come to a hole, jump, and hold tight; that's the way I do!"

And so little Rudy did, too; that is why he so often sat upon the shelving roof, and up in the tree tops, and even upon the high ledges of rock where the cat could not follow him.

“Higher up!” said the trees and bushes.

“Look how we climb, how high up we reach, and how fast we cling to the very narrowest ledges.”

Rudy reached the mountain tops even before the sun rose and touched them. There he drank his morning draught, the fresh, life-giving mountain air—the draught that only the good God knows how to prepare—in which is the fresh fragrance of mountain herbs and the mint and thyme of the valley.

The swallows from his grandfather's house flew up to him singing: “We and you, you and wel” The Spirit of Giddiness often tried to seize him, but said she to the Queen of the Ice Fields: “I can't do it; that monster of a cat has taught him.”

HANS ANDERSEN.

IV. A NEWCOMER IN EARTH AND SKY

ONE day a little baby came and began to live in this beautiful world.

A little girl's Christmas doll, as you know, may live in her heart, so that she begins to love it before she has even seen it, and a boy takes pride beforehand in a toy engine that has been promised him for a Christmas present.



So the mother has been laying up love for this newcomer. It was not to be simply a doll or toy. It must have flesh like her own flesh, so as to have eyes to see with, ears to hear with, touch and taste and smell, a heart to love

with, and all that makes a baby lovely to see and happy in its life.

This mother worked and rested, thought and prayed, ate and slept, with always some thought of what would be good for the little child.

We who were once just such babies should love our dear mothers. We must think tenderly of all mothers. This book is going to tell what makes earth a good place to live in, for this and all babies, and for ourselves and our families.

Only a baby small dropped from the skies;
Only a laughing face, two sunny eyes;
Only two cherry lips, one chubby nose;
Only two little hands, ten little toes.
Only a baby small, never at rest;
Small, but how dear to us, God knoweth best.

V. THE BABY

WHERE did you come from, baby dear?

Out of the everywhere into the here.

Where did you get your eyes so blue?

Out of the sky as I came through.

What makes your forehead so smooth and high?

A soft hand stroked it as I went by.

What makes your cheek like a warm, white rose?

Something better than any one knows.

Where did you get that pearly ear?

God spoke, and it came out to hear.

How did they all just come to be you?

God thought about me, and so I grew.

But how did you come to us, you dear?

God thought of you, and so I am here.

GEORGE MACDONALD.

VI. EARTH FOR A HOME

THE same One who gave the dear baby to the mother made the great world and all that is in it.

The oldest and best story of the making of the earth is told at the beginning of the Bible. Here are some of the sentences that help to tell it:

In the beginning God created the heavens and the earth. And God said, Let there be light: and there was light. And God called the light Day, and the darkness he called Night.

And God called the dry land Earth: and the gathering together of the waters called he Seas.

And God said, Let the earth put forth grass, herbs yielding seeds, and fruit trees bearing fruit after their kind.

And God made the two great lights; the greater light to rule the day, and the lesser light to rule the night; he made the stars also.

And God said, Let the waters swarm with swarms of living creatures, and let birds fly above the earth in the open firmament of heaven.

And God made the beasts of the earth, and the cattle, and everything that creepeth upon the ground.

And God said, Let us make man in our image, after our likeness, and let them have dominion over the fish of the sea, and over the birds of the heavens, and over the cattle, and over all the earth.

And God saw everything that he had made, and, behold, it was very good.

Do you see from this story that the baby was a prince, or a princess, and that when it was given to the earth, the earth was also given to it?

Macdonald begins his story "The Princess" by saying so.

EVERY LITTLE GIRL A PRINCESS

There was once a little princess, who —

"But why do you always tell us about princesses?"

"Because every little girl is a princess."

"You will make them vain if you tell them that."

"Not if they understand what I mean."

"Then what do you mean?"

"What do *you* mean by a princess?"

"*The daughter of a king.*"

"Very well; then every little girl is a princess, and there would be no need to say anything about it, except that she is always in danger of forgetting her rank and behaving as if she had grown out of the mud.

"And this is why, when I tell you a story of this kind, I like to tell it about a princess. Then I can say better what I mean, because I can then give her every beautiful thing I want her to have."

VII. AIR AND SUNSHINE

WE will forget all the other people in the world, and try to think what earth must have for this new resident,—the little baby of Lesson IV. You may, if you like, imagine it was your own self.

The first need of all is *air to breathe*.

The baby's lungs must have air to breathe every moment of its life.

How shall it get the air? Why, the good old earth is wrapped all around with a thick layer of air. It reaches so far that no one has ever been beyond it. There are mountains nearly five miles high, and the tops of them have air like the rest of the world, only it gets thinner up so high.

It is so soft we push it aside when it is in our way. We see through it and move about in it as if it were not there. Up in the cold

countries of the north, where the Eskimos live, babies find it waiting for them to use, and in the hot climates of the south it is rightly mixed with what lungs and lifeblood need for healthy living. All we need to do is to give it a chance to keep itself pure, and then help ourselves to all we can take of it, the more the better.

Next, there must be *sunshine*. If this Somebody of our story is to grow up a fine, strong, healthy boy or girl, there must be plenty of sunshine. But sunshine all the time, it seems, is not needed; and the earth turns round and round, sometimes toward the light and sometimes away from it; so, just as the creation story says, there is day and sunshine, and dark night for sleep.

The great sun does more than give us light. It smiles upon every leaf and flower. It keeps earth and air warm. It rules over the earth, never letting it go astray, as you will learn when you are older.

VIII. WONDERFUL WORLD

GREAT, wide, beautiful, wonderful World,
With the wonderful water round you curled,
And the wonderful grass upon your breast —
World, you are beautifully dressed!



The wonderful air is over me,
And the wonderful wind is shaking the tree;
It walks on the water, and whirls the mills,
And talks to itself on the top of the hills.

You friendly Earth, how far do you go,
With the wheat-fields that nod and the rivers that
flow,

With cities and gardens, and cliffs and isles,
And people upon you for thousands of miles?

Ah, you are so great, and I am so small,
I tremble to think of you, World, at all;
And yet, when I said my prayers to-day,
A whisper inside me seemed to say,
"You are more than the Earth, though you are
such a dot:
You can love and think, and the Earth cannot."

LILLIPUT LEVEE.

God has a thought for the maple,
You may read that thought in the tree.
Would you know His thought for the granite?

Look at the granite and see!

His thought for the springing grass
Is told by the cool, green sod;
The rose unfolding its petals
Discloses the mind of God.

Let us try to think what some of the earth
things say to us, or what we feel to them.

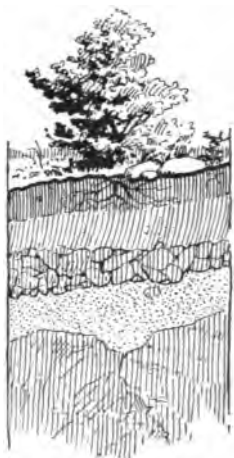
Each reader should make at least one little
story. The verse above will tell you how.
See also language work on page vii.

IX. EARTH MATERIAL

WHAT is the earth made of?

If you have looked about you, I do not need to tell you that the ground is different in different places.

Here, we find clean fine *sand* that we can sift through our fingers without soiling them. It is clean even when it is damp. We pat it together into a shape, but it falls apart again. In the country it is yellow, and on the seashore it is nearly white and very fine.



There, the ground is a great bed of *clay*. If it is dry it feels hard, but it will crumble, and if it is wet it is soft and sticky. We can soften it and make it into whatever shape we like, and when dry it will hold the form

we have given it. Both sand and clay, when ground fine, make dust that the wind blows about.

In another place there is neither sand nor clay, but rich *soil* in which plants grow thickly. Where there is good soil people do not let wild things grow, but plant what will be of use to them.

Mixtures of these three—*sand*, *clay*, and *soil*—make the most of the ground under our feet. Children sometimes call it *dirt*, a word which means something else. Its real name is earth, because it is the material of which the surface of the earth consists. Some places show layers of each kind, as in the picture, where the upper layer is soil, the one next below sand, and the bottom one clay.

Sand and clay may be very deep. Good-sized hills may be gravel, a coarser kind of sand, or clear clay; but underneath there will always be found solid rock. *Rock* or *stone* is the true earth material; the clay and sand

and gravel have been made from stone, by grinding together and by the help of sun and wind and rain and frost.

Suppose it were all rock. It would be firm to support buildings and to rest against. Would it have made a good dwelling place?

No; for one of the needs of all living things is food, and it takes soil to make plants grow. You have seen fine, dry mosses growing on damp rocks, but grains and grasses, fruits and flowers, need soil.

Here are names of some of the forms of earth material:

soil	loam	mold	peat	clay	stone
sand	gravel	pebbles	rubble	metals	boulders.

Can you not make a collection of samples and write stories telling uses of each?

X. WEIGHING THE BABY

ONE of the first things the father and mother wish to know about their new baby is, "How much does it weigh?"

The next story tells of a baby that had no weight. Before our baby is put upon the scales the friends will try to guess its weight. This plump little body will weigh seven, eight, nine, perhaps ten pounds. If you asked to hold it, the mother would say: "Be careful; it is heavy, don't let dear baby fall!"

If it should fall, it would drop straight down to solid earth, and there it would rest. Falling does not matter; what hurts is striking the hard earth. What if it did *not* drop down, but sailed about or went up higher! That would not do; there must be something firm and solid for things to rest upon.

Earth is the great hard resting place.

XI. THE LIGHT PRINCESS: A FAIRY STORY

THERE was once a baby daughter of a king and queen. She was as lovely a princess as ever was seen. The day drew near when she must be christened, and the king wrote all the invitations with his own hand.

Somebody is apt to be forgotten at such times. That does not matter much, only one must mind who. The chance fell on the Princess Makemnoit, which was very awkward, for the Princess was the king's own sister. It was not so very strange, for she was seldom at court, being a sour, spiteful creature. After waiting in vain for an invitation, she decided to go without one, and to make the whole family miserable.

She was kindly received by the happy monarch, who forgot that he had forgotten her.

When the time came for the christening, Princess Makemnoit contrived to throw a powder she had brought with her into the font. She turned round three times, and muttered in a voice loud enough for those near her to hear,

Light of spirit by my charm,
Light of body every part,
Never weary human arms,
Only crush thy parent's heart.

They all thought she was repeating some foolish nursery rhyme, but the mischief was done. The wicked aunt had deprived the child of gravity.

You ask how this was done? I answer, she had only to destroy gravitation. This was easy enough, for the princess was a philosopher, and knew all the ins and outs of gravitation as well as the ins and outs of her boot lacing. Being a sort of witch, she could undo those laws in a moment so that they

would not work at all. This she had done for the baby princess.

The first awkwardness from this unhappy thing was that the moment the nurse began, as she had done before, to wave the baby up and down, the child flew from her arms to the ceiling. The air did not allow her to go quite to the wall, but within a foot of it she lay kicking and laughing.

The nurse flew to the hall and begged the footman to fetch the house steps directly, and she had to stand upon the top step before she could reach the baby's long skirt and pull her down.

Other things like this were constantly happening, and there soon came to be a great commotion in the palace. The king and queen, of course, refused to listen to such nonsense; but one day when the king held the little daughter, he gave her a wave up—but not down—and she rose slowly to the ceiling and lay there in perfect comfort.

Both himself and the queen were horror-struck. The king had not the slightest clew to the difficulty; but the queen, who was more clever, began to suspect what had been done to the child.

As the king was a little king over a great country, he could not reach the baby even from the steps. "Take the tongs, John," said his majesty, and thus the little princess was brought down to him.

After that, great care was taken.

This did very well in the house; but a month later the little princess was lying on a bed in the queen's chamber and the window was open. A frolicsome wind, on the watch for mischief, rushed lightly in, and, taking its way over the bed, caught the child up and floated her along like a piece of thistle down or a dandelion seed.

Soon the baby was missed, and search was made for her everywhere. The palace was like a beehive in a garden.

In a moment more a great clapping of hands told that the princess was found. The little wind-puff had carried her to a rosebush, and had finished his mischief by shaking down upon her a great shower of red rose leaves.

She was even more carefully watched after this, but it would be endless to relate, the story says, all the odd things that happened. But, if she was an anxiety to her parents' hearts, there was never a home or palace where a light-hearted baby kept its household in such good humor.

It was true that as she grew larger she never did make human arms ache as other babies are wont to do. And she was such fun to play at ball with. There was no danger at all of letting her fall. Only they must never throw her up, especially out of doors, for then she might never come down!

Upstairs in the royal apartments it was different. One day the king went into his

counting room and was counting out his money, but his heart was sad. "To think," he said, "that every one of these gold sovereigns weighs a quarter of an ounce, and my real flesh-and-blood princess weighs nothing at all."

The queen was in the parlor eating bread and honey, but it gave her no pleasure. She burst out crying and could not swallow, and the king, when he was brought, could say nothing to comfort her. The light-heartedness of the princess was sometimes as great a trouble as her lightness of body. Whatever happened made her laugh, and she would meet some dreadful story of suffering with shrieks of merriment; yet, in the main, she was a happy, laughing girl, always amusing her parents in spite of themselves.

The rest of the story, how she got back her lost gravity, is too long to be told here. You must seek for it in its own book, "Dealings with the Fairies," by George Macdonald.

XII. WHAT IS GRAVITATION?

GRAVITATION is the opposite of what made the princess so very odd a child. If there were none, we should all go up as easily as we fall down, which might be inconvenient, might it not? Nuts and apples would not fall from trees when they let go the twig on which they grew. The wind, if there could be a wind, would have its way with things, for they could not move or stay still of themselves.

This is all clear enough, but some things seem to have so *much* gravitation and other things so *little*. It is hard to see just what the gravitation is. Lead has a great deal, and cork but little. Feathers have hardly any, if we may judge by the way they float in the air if they get a chance.

The kind we know most about is an



invisible pull the earth has to draw everything to itself. We call it the *weight of the things*. A ship, if it is to go out to sea and has not enough, takes into its hold something heavy, that is, with strong gravitation. A balloon gets up by having as little as possible; but it, and the birds that fly, would come to harm if they had not good weight to steady them.

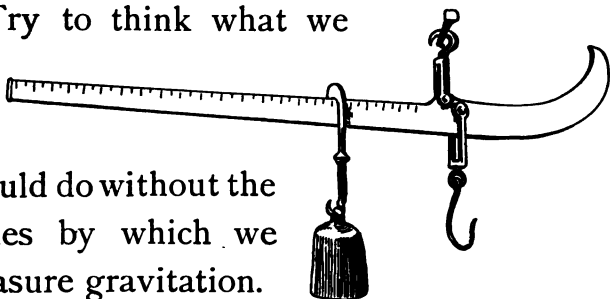
These are things about the earth that it will be worth while to observe closely. For gravitation, as you will learn by and by, is perhaps the greatest prince of all the rulers of the earth and sky. If any wicked witch *were* able to overcome him and set gravitation aside, the worst catastrophe that the world has known would be the result; and so many fatal things would happen at once that no one would be left to tell of them.

People have learned to get on with this silent, invisible actor, or force, so as to make it useful. As we look at the thermometer to

find out how warm it is, we have tests by which to tell how *heavy* things are.

Try to think what we

should do without the scales by which we measure gravitation.



16 drams make an ounce.

16 ounces make a pound.

25 pounds make a quarter.

4 quarters make a hundredweight.

20 hundredweight make a ton.

24 grains make one pennyweight.

20 pennyweights make an ounce.

12 ounces make a pound.



A ton of coal, a hundredweight of hay, a pound of sugar, a grain of quinine.

XIII. A HYMN

I SING the almighty power of God,
That made the mountains rise,
That spread the flowing seas abroad,
And built the lofty skies.

I sing the wisdom that ordained
The sun to rule by day;
The moon shines full at His command,
And all the stars obey.

I sing the goodness of the Lord,
That filled the earth with food;
He formed the creatures with His word,
And then pronounced them good.

There's not a plant or flower below,
But makes Thy glories known;
And clouds arise, and tempests blow,
By order from Thy throne.

Creatures that borrow life from Thee
Are subject to Thy care;
There's not a place where we can flee,
But God is present there.

WATTS.

XIV. FOOD FOR THE BABY

HAS the baby of our story been all this time without *food*?

No, indeed; it did not go more than four hours at a time, for babies and birds must be fed often.

Here in the picture is a baby eating its dinner. This little Somebody will soon want other food



than the milk it is drawing up through the tube.

Are you old enough yet to begin to wonder why it is that you must eat, and what it is that food does for you? Let me try to tell you.

"We eat because we get hungry," I hear one of you saying.

That is quite true, but that only changes the question to "Why do you get hungry?"

The chief reason is that every breath you draw, every movement you make, even every word you speak and every thought you think, wears out little parts of your body.

It will not do to let the body get worn, as a dress or coat may do, till it is not fit for use, and then set about repairing it. In living things the repair must go on as fast as the wear, or strength, will be lost.

The body is made up of millions of little bodies of different kinds. These tiny bodies are *cells*, and each would repair itself if the food material were made ready and brought to its door. Remember, sometimes when you are eating, that a million little lives are waiting for their portion of your good dinner, and that you are their crowned king.

But it is not enough for this dear baby

that it keeps its little body in repair, that is, in perfect health.

The wonderful thing about the baby is that it is *growing larger*, and that in time it will become a man or woman.

Air and sunshine, food and drink, and good loving care will help this baby to build a fine, strong, big body for itself. And the odd thing is that we never see the building half done—just as we cannot see by what steps the grass grows. All that we see is first a baby a little larger and wiser every month, then a boy or girl, then a strong man or woman, and last, perhaps, a very old person whose body is wearing out faster than it can be repaired, and will soon be left to waste away altogether because the life will not any longer try to use it.

The first process we call *life* and the wasting one is *death*.

XV. CLOTHING

THERE was clothing waiting for this baby when it came. Those who have had baby



brothers or sisters will remember the snow-white dresses, and the soft woolly blankets, and the socks.

All these things, and all the clothing anybody wears, must of course be made of materials the earth furnishes. Mother Earth is the great provider for us all.

We see the coverings of the cat and dog, the horse and cow, the bird and fish, ready-made for them and nicely put on. It is washed and dried, and mended, if need be,

without being taken off; but there is no best suit in a trunk or clothespress to wear on Sundays.

The animals do more than make their own clothing; they provide stuff out of which ours is made. The pillow for the dear baby's head is filled with the softest feathers; its fine dresses are made of the fibers of a plant; its warmer clothing and the blanket came from the sheep and lambs. A humble little worm spun the silk of its little cap. Do you care to know more about the ways people have of getting material for clothing and fitting it for all their wants?

Let us first try to understand what clothing does for us. If I were to ask you, you would say: "It keeps us warm." That is right; but some children think it warms them. That is a different story.

It would be truer to say that it is the food they eat and the fresh air they breathe that does that. It is your rich red blood that

warms your bodies. Run and jump if you are cold, and take long strong breaths to make your blood move faster. That is better than buttoning up the jacket. The woolly coat keeps the warmth in instead of letting it escape into the frosty air; because heat is such a generous thing it is always giving itself away if we do not make walls and wraps to hold it.

Did you ever see your mothers put a little jacket, called a *cozy*, over the teapot to keep the heat from escaping? That is the way clothing keeps you warm. The furnace that warms you is a part of your own selves. When the thermometer tells us that the heat of the room is 70° it finds that our bodies are nearly 100°.

The layers of clothing that we wear keep the heat from being wasted faster than we can make it.

In the warm summer time clothing does the opposite thing,—it keeps the hot sunbeams from burning our tender flesh. The next lesson tells about that.

XVI. SHELTER AND PROTECTION

THERE is something else that is needed as truly as air and light, food and clothing.

In warm bright weather it is pleasant to be out of doors. To sleep out under the open sky might not be a hardship. There are sights and sounds in the nighttime that would repay us for the lack of a bed. But how would it seem to be obliged to live all the time with nothing over us but the great roof of the sky?

There are but a few animals that do not seek shelter from bad weather, and safety from enemies. Herds of cattle on the great



western plains find the least bit of a hillock and huddle together on its leeward side for protection from the wind. Holes and caves, big or little, are homes for creatures.

What has earth provided to meet this want?

A single tree is a shelter, and a forest is sometimes all that is needed for safety from wind and storm. The welcome shadow is a protection from noonday sun.

In hot countries the day is the time of need. Journeys must be taken by night, and the days for rest and sleep. The shadow of a great rock may save the lives of wanderers who have no other safety.

This is what earth can do all by itself. Let us consider what man has learned to do with materials which earth provides.

The tent for traveling people, and the hut for those who stay in one place, are the simplest ways.

How shall we think of the shelter and protection of the baby we have adopted?



If the home is up in the Frozen Zone, and the time is winter, the hut will be made of blocks of clean snow. You will see by the picture that it is carefully, prettily shaped. If it gets broken, soiled, or melted, a little fresh snow will make it good again. The window of such a hut will be of clear ice.

In springtime the Eskimos and Laplanders leave their melting huts and go journeying about with tents. The hut is a place of danger then. Many wait too long and take colds from which they never get well.

Where there are collections of huts made of earth there is sometimes a wall around for safety from enemies.

Each of you can picture twenty kinds of houses. If there is plenty of love, each will be a dear home for all who live in it.

XVII. THE NEED OF WATER

WERE you ever very, very thirsty?

How long do you think you could go without drinking, or eating moist food?

Do you remember a time which people called a great drought, or water famine?



Or did you ever hear of vast deserts where no rain falls, and where the winds bring no moisture?

If you have you do not need to be told that an earth without water would not be an earth to live upon.

But how much water? Could not the earth spare some of its great lakes and rivers, and parts of its great ocean?

If the greatest things of earth and sky were to fall into a dispute which was the most useful, I think Ocean could make out a pretty good case for itself.

"If I were to be selfish," we may think of it as saying, "and keep what is my own for a single year, the rest of the earth would become as dry as a cinder, and not a plant or animal would be alive on it.

"A single one of my sections — the Indian Ocean — gives to the air what would amount to fifteen feet depth of its water, and we do it, as a rule, so quietly that it makes no disturbance. You might be sailing over us and not know it."

But the Sun would be sure to answer: "Do I have no part in your giving? If I were to withdraw my warm rays, Ocean, you could not lift the water a foot above your surface; and it is not certain that you do give it, for when I come and ask for it you cannot help letting it go." This is hardly fair, for in nature world what things do is always supposed to be their wish.

It is true that the Sun is pumping almost ceaselessly from the ocean into the air. The

air is a nearly transparent sponge full of tiny cells which hold moisture. From it we and all creatures, yes, and plants, drink as we breathe.

The dry air of a desert is as hard to bear as its lack of water to drink. Travelers carry water with them and keep damp cloths over their mouths to breathe through.

Thirsty air, if it cannot find a pond or lake, will drink from anything that has moisture to spare. On a dry day it will take all there is in a wet handkerchief that you hang out upon a clothes line in a few minutes. It will take from the bodies of animals, or from the ground. It would be hard to follow such a wholesale giving and taking as is going on all the time; and of things you would suppose were dry it is often true that more than half is water in disguise. This taking of moisture is called *evaporation*. The nearly invisible moisture is vapor or water dust.

XVIII. WHAT IS OVERHEAD?

ALL of us like to go on journeys. It makes us love our homes better to go away for awhile and then come back.

By car or boat we can make quite a journey in a day. In a week we can go across our great country,—the United States. In a month people go across the ocean to Europe and come back again. In six months, if they do not make long stops by the way, people can sail around the world.



Suppose a person should say: "I have done all that; now I want to do something no one has ever done. I want to go outside the world." Where would he have to go?

There is no place except up in the sky.

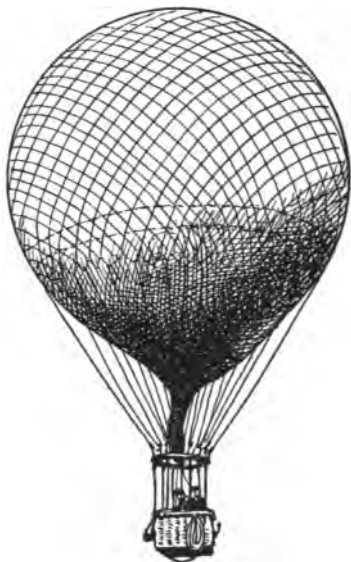
Everywhere we go there is sky overhead

— plenty of sky if we could invent a boat to take us anywhere we wished to go in it.

The lark flies so high as to be out of our sight; but we are sure it will come back to earth. Some of us have had friends go up in a balloon so far that the earth looked flat, and they could see no buildings or trees. After all, it was but a very little way into the wide, wide sky.

No matter how high the bird might fly, if it were to lose its strength, it would fall straight to earth. If disaster befell the balloon, it would drop lower and lower till it struck the earth somewhere. So it seems we are held as prisoners and cannot get away if we wish.

The earth is the solid resting place. We



call what we stand upon the *ground*. Buildings stand upon it; trees and plants have their roots in it. There are sea birds that can fly all day, but they must have something solid to rest upon when their strength is gone.

There is no limit to the sky. The word *heaven* means high or lifted up; so we often hear the sky called the *heavens*. If our thoughts go away from earth, they must go heavenward.

What is it that we see when we look away from earth?

A vast dome of blue: the sun crossing it by day, and the moon and stars by night: cloud changes, beautiful sun-painted colors in daytime and softer ones in moonlight: dazzling light at noon and deep, black darkness sometimes at midnight: rain and snow and hail coming down from dull gray sky whose blue has all faded away, then blue coming back again.

These are some of the things of the sky. Timid creatures creep into holes in the

ground or caves in the rocks. But just as we cannot go far above the earth, so we go but a little way into it. We learn of deep mines, of wonderful caves, of subways, of the Catacombs, where a great many early Christians lived in hiding places underground; but, when we remember how great the earth is, we shall see that we live only *on the surface*, held to it in a most wonderful way; and that the heavens above are not for our grasp, nor for our reach, but only for sight and hearing and thoughts.

What have we learned that we can fix in our minds?

This: that we live upon the outside of the great, round earth which is somewhere in the midst of the sky. The sky holds also the moon and all the shining host of stars.

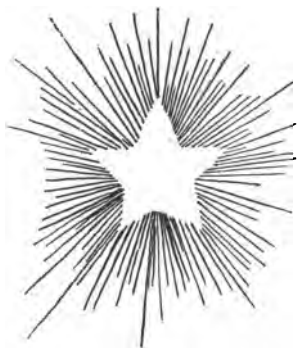
The spacious firmament on high, with all the blue
ethereal sky,
And spangled heavens, a shining frame, their great
Original proclaim.

ADDISON.

XIX. A CHILD'S WONDER

"I SEE THE STAR."

THERE was once a child, and he strolled about a good deal, and thought of a number of things. He had a sister who was a child too, and his constant companion.



These two used to wonder all day long. They wondered at the beauty of the flowers; they wondered at the height and beauty of the sky; they wondered at the depth of the bright water; they wondered at the goodness and the power of God who made the lovely world.

There was one clear, shining star that used to come out in the bright sky before the rest. It was larger and more beautiful, they

thought, than all the others; and every night they watched for it, standing hand in hand at the window. Whoever saw it first cried out: "I see the star!" And often they cried out together, knowing so well when it would rise and where.

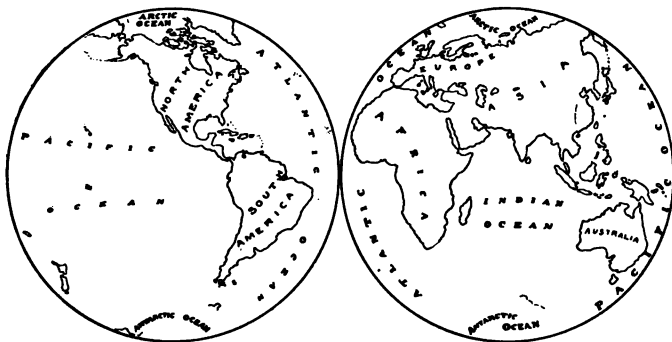
So they grew to be such friends with it that before lying down in their beds they would always look out once again, to bid it good night, and when they were turning round to sleep they used to say: "God bless the star!"

DICKENS.

XX. TWO OCEANS

SOME of us live beside the sea; all of us know what it is like.

It covers a great deal more surface than the dry land of the earth. Look at the map of



the world and see the shapes of land and water. You can find *five oceans*; but ships sail from one to another, so you can see they are all one.

The water of the ocean is never at rest. When the earth turns round and round it

carries the water with it, but the water does not keep its surface fixed and smooth.

Ocean *waves* are beautiful to see. They break upon the shore with white foam, and they sing of all that ocean means. Far out at sea the waves rise and fall like a mighty pulse beating.

The ocean *tides* run up the beach as far as they can go, and then draw back again. They meet the rivers running down and turn the waters back for a little while, then take them out into the deep sea. When waves are strong they wear wreaths of white foam.

There is another great ocean that covers all the land and all the sea. Every inch of ground on the earth is its shore. It is the *air* ocean in which we live. To which does it belong, the earth or the sky?

Pure water is almost *transparent*, and in a clear glass nearly *invisible*. We hardly notice the air that is about us at all.

How easily we push it aside when we walk

or run! Do fishes in the water think as little of it as we do of air?

And yet air is very strong. A good brisk wind shows what power it has. In a blizzard it tests the strength of a strong man.

Blow up a football or a toy balloon till it will hold no more, and see what air is like when it cannot get away. Try what an explosion you can make by filling even a paper bag with your breath and striking it.

A fan or a windmill makes the air move with strength.

Because the air is invisible we do not see that it is never at rest. Kite flying is the best air play to show how it keeps up a constant motion. Our breaths keep it moving; a fire makes a draught; the sun shining on one place more than another sets air in motion. Here are words that measure its quickness and strength: a zephyr, a breeze, a brisk wind, a gale, a hurricane, a tornado.

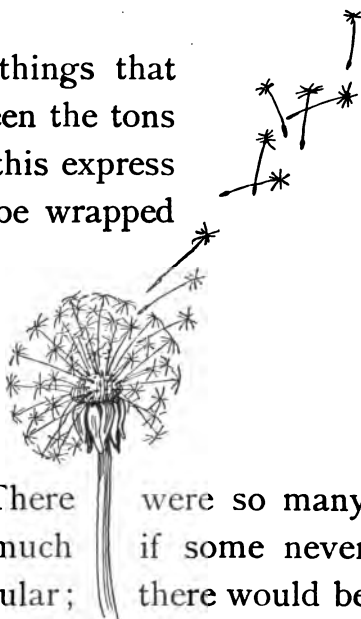
XXI. THE FIRST EXPRESS BUSINESS

THIS first expressman was not a *man* at all !
What was it? What was carried? How far
did it go?

The most valuable things that
were sent must have been the tons
and tons of seeds. By this express
they did not have to be wrapped
and marked. Any
number that were
ready when it came
along were taken from
their own doors and

dropped anywhere. There were so many
that it did not matter much if some never
got anywhere in particular; there would be
enough that did, and no one would find fault.

The *wind* was the busy expressman, and
the *air* his carriage.



When thistles, daisies, golden-rod, and even pine trees come up where they were never planted by man, it is safe to think that it may have been the wind that did the good or harm in bringing the seed.

Rain helps in the planting and sun in the upspringing, and the right kind of soil makes a difference in the growing. There is hardly any bit of soil so poor that something brought by the wind will not seek to cover it with foliage. Then if, as we say, it has half a chance, it will plant itself year after year and grow.

The thing to learn from this lesson is that nothing comes by chance; that a great many things help in a great work. There is a lesson of patience, too; for seeds must sometimes wait a long time for their chance to grow.

How far had the seed traveled on the wings of the wind? Probably not very far; and yet possibly a long way, for the wind is a great traveler. Not all the seeds went by this

express; there is another way that you will find out later.

This express carries other things than seeds. When the water has risen from the sea in fine *vapor* how shall it be sent back to the lands that need it?

We see clouds sailing over the sky as if they went of their own wills. What is it that takes back the homesick water that thought it wanted to run away from its home up in the hill country? Every drop of water has been on these long journeys, and somewhere it had to have the help of the wind express.

XXII. THROUGH FIVE GATEWAYS

WE must not forget the baby! It is through *its eyes* we are getting acquainted with the earth home.

It will stay a baby but a little while, but what a wonderful amount of learning it will get even before it can talk!

There will be a first time when it will follow the light with its eyes,—a first time when it will turn its head when we speak to it,—a first time when it will begin to look at its little hands and try to grasp things,—a time when it will not be willing to take something into its mouth from a spoon, lest it should not taste good. There is a time when a little one feels a pain but cannot tell whether it is in hand or foot.

All these things, and a great many more, make the little brother or sister very interesting.

We say a baby is all right if it has *five gateways* open for knowledge to come in. Most children have them all when they come to us, but sometimes a fever may burn so fiercely in the little frame that one of these may become closed. Then we have to say, "Poor little child!" for it is blind or deaf. There are a few who are both blind and deaf. Have you heard of Helen Keller, who is getting a college education with neither *sight* nor *hearing*?

The other gateways are the senses of *touch*, *taste*, and *smell*. All the beginnings of our knowledge come through one or more of these gates. All that belongs to light comes through the gate of sight; all of sound through the ear. Feeling comes from nerve threads that go like telegraph wires all through the body. How wonderfully we are made!

XXIII. THE WORLD BEAUTIFUL

THINGS might be good and useful without being beautiful. It does not matter much to the baby whether it lives in a hut or a palace, if it is kept from too great light, too great heat or cold, or too much noise; and if it has a soft resting place for its tender flesh.

But this time does not last long. "Look!" is one of the first things we ask the baby to do; and "pretty" is one of its first words to speak.

What helps to make things pretty? One way to find out is to suppose things had been different. Let us try to think of a world all of one color. Have you seen a picture in which everything was brown? Suppose we had a brown hill with brown trees against a brown sky, with brown waterfalls and streams! Suppose also that our faces and all our

clothing were brown because there was no other color!

Color gives one of the chief beauties to things. We do not value it half enough. Picture the green hills against a sky where white and rose-colored clouds sail back and forth. Could any other way be as good?

We need all the colors; the dull browns of the ground and the gray of the rocks are pretty as backgrounds for the brighter tints in flowers and fruits.

Red, blue, orange, green, violet, yellow are names of great classes of colors.

I visited a place where skillful artists were weaving tapestries with balls of wool to copy a great painting. Hundreds of balls or bobbins lay waiting their turns to be used in the woven picture.

I asked how many colors they had, and was told that there were six hundred different hues, and over fourteen hundred tints and shades.

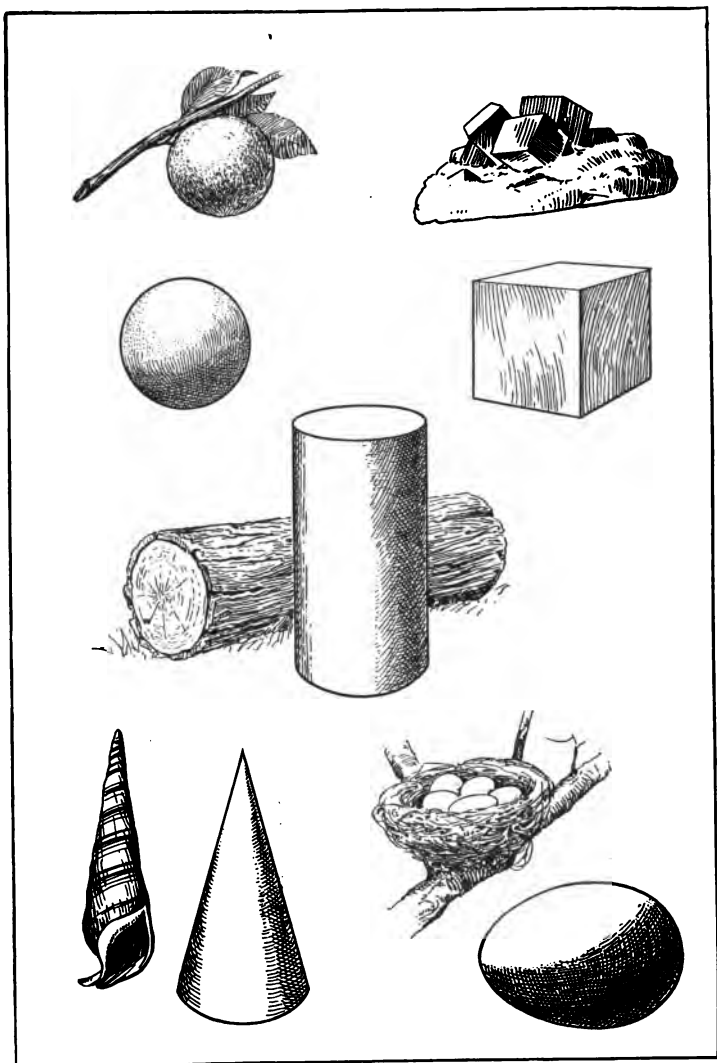
All these were needed to stand for all the

colors found in the flesh of persons, in landscapes, articles of dress, and furniture. Does it not make you feel proud of old Mother Earth that she can give us such colors, and provide the dyes to help us to copy them?

If *color* is one of the chief things of beauty, the other is *form*. How shall I show you the need that things shall have forms by which we can know them? You must think it out yourselves.

The trees in winter, flowers and fruits in summer, shells upon the shore, crystals and gems found deep in the rocks, the eggs of birds, are a few of the things that have the greatest *beauty* of form.

The ancient Greeks loved form so well that they wrought beautiful figures and statues in marble which have lasted for over three thousand years, and people visit the great museums of the world to see them. Just as all the colors came from Mother Nature, so all the forms began with what she had provided.



Shapes in earth and sky were the models for the sculptors. The vase gives a chance for all the varieties of straight and curved outlines. If you like to draw, see how many kinds of vases you can make, each one of which will be symmetrical.

The human body is said to be the finest



combination of forms in the world. We ought to try to keep our bodies healthful and beautiful.

And we must fill our homes with things of beauty if we can. The town or village in which we live must be made beautiful too, for it belongs to all, and these things help to make life true and good.

XXIV. FEATHERS AND FUR

LITTLE Polly Patterson was dressed in her new winter suit to go out shopping with her mamma. Her hat was trimmed with pretty feathers; her cloak had a border of white fur, and she carried a white fur muff.

She knew that she looked well, and she wanted her grandpapa to see how pretty she was in her new suit. She went close up to him and said: "See, grandpapa; don't I look nice?"

Grandpapa lifted his hands and said: "Dear me! who is this dressed all in feathers and fur? is this Polly?"

"Yes, sir," said Polly, with a smile.

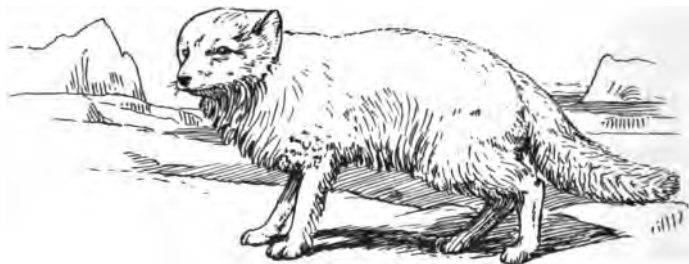
"And where did these fine things come from?" asked grandpapa.

"Oh, they came from Mr. Brown's store down on Broadway!" said Polly.

"They had to come a good many thousand miles to get there," said grandpapa.

"Did they?" asked Polly.

"Yes. In the first place somebody away off in Asia or Africa had to catch an ostrich and pull out some of his feathers. The feathers were sent across the ocean before



Polly could have them on her hat. And somebody up at the far north had to catch a white fox or two, and send his fur over rivers and mountains before Polly could have a muff and a border around her coat."

"Is this a true story that you are telling, grandpapa?" asked Polly.

"Yes, 't is a true story. What do you think about it, Polly?" said grandpapa.

"I'm too little to think about such big things," said Polly.

"Well, what can little girls think about?" asked grandpapa.

"Oh, they can think how nice it is to go shopping and buy candy!" said Polly. "I'll buy you some to-day if you'll give me the money."

Grandpapa made a funny face at Polly; but he gave her a ten-cent piece.

Then Polly went shopping; but she did think also about the ostrich that had worn her pretty plumes in the hot desert, and the white fox, with big bright eyes, a pointed nose, and a bushy tail, and she asked her grandpapa to tell her more about them.

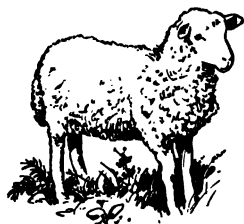
She knew that no amount of money could have bought the fur if there had been no white fox that needed it first to cover every part of its body, even to the soles of its feet.

Do our readers know about the ostrich farms which now supply the most of the plumes?

XXV. THE GIFT OF THE SHEEP AND LAMB

IT is a long way from the fleecy coat of the lamb to the soft flannel that the baby wears. Who ever found it out?

The threads of wool are curled up so closely, and are so full of kinks, that they do not seem half as long as they really are. And they are not very long. One thread of wool as it comes from the sheep is not long enough to thread into a needle to sew with, or to use to make cloth.



The wives of the shepherds long, long ago found out ways of combing and straightening the wool fibers and fastening them together without knots. They did it first between the thumbs and fingers. Then some one invented the wheel and distaff, such as you see in the

picture. If each of you will untwist a little bit of yarn, you may find the single fibers nicely put together for use.



This work is called spinning.

In early times nearly every farmhouse had its spinning wheel just as people have sewing machines now.

While the weather was still warm the farmer washed his sheep in some stream or brook, and sheared off the long wool that had been growing all the year. More would grow just as your hair grows after it has been cut.

This was men's work. Then the women of the household took the tangled mass and sorted it over, keeping the best for best uses, but saving all for some purpose.



As fast as the wool was spun it had to be wound upon a reel into skeins to keep it from getting snarled or knotted.

The weaving needed another machine, called a *loom*. Not every family owned a loom. Neighbors lent their looms, or some who learned to weave well would take the great



bunches of skeins from their neighbors and weave them into blankets, flannel, or cloth for clothing.

These old-time ways are seldom seen now in places where we live. The wool is sent to great factories, where it is woven upon larger looms.

Instead of the pretty daughter of the house turning the wheel with her foot and passing the thread through her fingers, singing as she worked, or threading the busy shuttle in and out between the rows of thread, we have the great machinery and the steam engine.

Something like woven cloth is made in another way. You may have seen it done in your homes. Instead of being woven, the spun wool or yarn is *knitted*. For knitting

a stocking four long needles are used, and the knitting goes round and round instead of back and forth.

Crochet work is knitting with a single needle.

These and other ways change the long thread into cloth. A little one-eyed servant helps us in the next step, which is garment making, when scissors have cut the shapes.

Little girls should all sew and knit. Busy work for leisure time helps to make life happy and good.



XXVI. THE SILKWORM'S GIFT

In his hammock of silk the little cocoon
Swings in the mulberry-tree;
The threads are as fine as the beams of the moon,
That he's spinning for you and for me.

ALL of you know about caterpillars and the way they have of changing into butterflies.

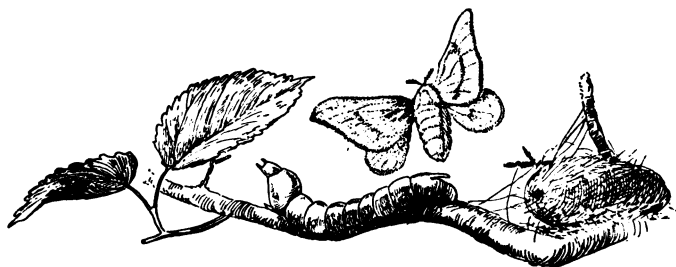
While they are getting ready to change they live a sleepy sort of life in cocoons of their own making.

Some of these cocoons are only fuzzy, sticky balls, but one of the grubs, the silkworm, makes a wonderful case in which to wait for its new kind of life.

The tiny grub spins a glossy yellowish thread and, while it is doing so, winds it around itself in the nicest way, keeping an oval shape and crossing its layers of thread with other layers so that they do not get tangled.

When the cocoon is finished there will be as many as four thousand yards in it. A thin, gummy, waterproof case covers all, and when the waking time comes the butterfly comes forth and leaves its case forever.

China was the place where silkworms flourished. While they were grubs or caterpillars



they fed upon the leaves of the mulberry tree. Some one was curious, as you or I might be, to unwind the thread so prettily wound. By soaking off the gum and working with care a great many yards could be unwound without breaking. This was the way we came to have silk, and satin, and ribbons.

This finely spun silk was the secret of the Chinese for hundreds of years. Royal ladies

tended the silkworm grubs with great privacy while they were growing on the mulberry trees, and the silk was woven into cloth in the palaces. Then kings and queens had something all their own to send as gifts to the kings of other lands.

In coming forth from the cocoon the caterpillar was apt to tear the threads. The people who were raising them therefore took the cocoons just before the time came for leaving them, saving only enough alive to raise other silkworms from them. In this way the perfect ones were soaked in boiling water, and whole cocoons could be unwound with hardly a break. The silkworm if left alive would never make another cocoon.

In New Jersey, Connecticut, and other parts of our country silkworms are now raised and silk is woven.

XXVII. THE GIFT OF THE FLAX PLANT

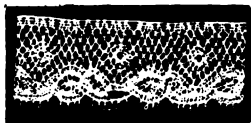
IF the sheep and the silkworm had to furnish all the material for people's clothing, all the hills would not be enough for pastures, and mulberry trees must be planted by thousands for food for silkworms.



From very early times a delicate little plant with a pretty blue blossom was discovered to have a soft inner bark which could be torn into shreds almost as soft and fine as silk. Sheep and lambs could not live everywhere, and only warm countries were good for silkworms, but flax was hardy. In some places it would grow coarse and strong, and in others fine and smooth, which was exactly what was needed for different uses.



Your handkerchief is probably of linen or flax, and the tablecloth and napkin you use at dinner time.



Beautiful laces are made of linen.

Another plant may be mentioned because it is grown very much as flax is, and is equally useful. It is hemp, and is used in making mats and coarse cloth. If you will pull a bit of rope apart, you will see it has long fibers. The



hemp plant grows to be nearly twice as tall as a man. Think of all the uses of ropes, on land and on sea, and see if the hemp plant is not a good gift.

The flax plant is to be remembered for another gift to man. Its flat brown seed is also a treasure. From it oil is pressed out to mix the paints we use.

The farmer who raises flax in countries best suited to it gets for a single crop as much money as he had to pay for the ground on which it grew.

In early times the women carefully pulled, sorted, and stripped the bark, then spun the fibers into thread and wove the thread into cloth. The cloth was yellowish in color and they spread it upon the grass in the sunshine, and watered it to keep it damp until it was white as we see it in the fine table linen.

A place called Damascus was famous for the fineness and beauty of its linen, and the pretty patterns woven into it, so that even now we call that kind of cloth *damask*, wherever it is made.

Muslin, percale, cambric, dimity, gingham, cashmere, serge, homespun, broadcloth, foulard, velvet, brocade, are kinds of cloth you can easily get and study.

XXVIII. "KING COTTON"

IN the south another plant was waiting to be found and used, just as you have waited to be found in the play of "hide and seek."

The cotton plant grew up and blossomed each year; then, as other plants were doing,



it set about getting seeds ready for more plants, that it might live long in the earth. It trusted to odd chances to get the seeds planted where they would grow well, but it did its own part; out of its heart of life within, it sent out soft silky hairs which wrapped the seed all about. These were safely packed in a strong pod. When the seeds and hairs were ready to go out and make plants by themselves, the pods burst open and showed such a bunch of soft fiber as you could not believe the pod had held.

Then it waited for something to happen; some creature might press against it and the hair might catch and pull a seed with it. This might travel a mile before it dropped off and fell into a soft place where it could grow, when it had had its needed rest.

The wind might help, or you or I might have had a seed cling to our clothing and so catch a free ride!

Not so are cotton pods neglected and trusted to chance now that man has learned how useful they are for clothing.



The ground where they grow is kept like a garden. The plants stand in rows in great fields, and in the springtime the balls are carefully picked and sent to the mills—all except those that are needed for planting for next year's crop.

Just as in the case of the wool and the flax, the fibers must be first spun into thread. It would be very interesting to see all the steps

from the picking of the cotton to the selling of the cloth. When you have done so you will wonder how even the poorest kind of cloth can be sold for a few cents a yard. All these things had to go on before the baby could wear its cotton dress.

Can you not make a study of several kinds of cotton fabrics to learn how they are made?

Bleaching and dyeing have their part also. In gingham the thread is dyed before it is woven; in muslins and cambrics the cloth is first woven and then colors are printed upon it.

The plant which has given so much material to the world, and employment to so many people, is sometimes called *King Cotton*.

XXIX. OTHER CONTRIBUTORS

THESE that we have studied are not the only plants and creatures that are doing what they can to make the world run smoothly for its royal family, Man.

It is true their leave is not often asked. Kings and princes have always been apt to think they had a divine, that is God-given, right to claim whatever would help to make their lives grand and kingly.

But rules or laws were written in men's hearts and minds that forbid them to be *cruel* or *selfish* or *wasteful*. When these laws come to be obeyed all will go well.

There are other earth gifts for food and clothing and convenience. A few are suggested on the next page that you may make stories of your own about them.

The rubber tree gives its gum.

The cocoa palm gives its shell and nut.

The oak gives its bark for tanning.

Sap runs in spring from the sugar maple.

The olive yields oil and fruit.

Sugar comes from the canes of sugar corn.

The juice of beets is made into sugar.

The tubers of the potato are a staple of food.

The berry of coffee and the leaves of tea are used for making drinks.

Leaves, roots, and flowers of herbs are used for relishes and for medicines.

The grapevine gives us one of our best fruits.

The bee gathers and stores honey.

Spices, mustard, pepper, etc., come from plants.

All our food has come from something that first lived a life of its own.

XXX. HIAWATHA'S CANOE

WE have read of Hiawatha as a child. Let us think of him now as older, and wishing for more things.

Give me of your *bark*, O birch-tree!
Of your yellow bark, O birch-tree!
I a light *canoe* will build me,
That shall float upon the river,
Like a yellow leaf in Autumn,
Like a yellow water-lily!

Next Hiawatha begged *boughs* from the cedar to make his canoe firm and steady.

"Like two bended bows" he made the strong and pliant branches.

It was for fine, tough *fibers* to fasten them together that he went to the larch-tree roots, and with them he also sewed the bark around the framework.

The seams were not yet so closed that

water might not enter, so he asked the fir-tree for its sticky, fragrant *balsam*. With this he smeared every seam and crevice.

By this time he had come to love his graceful, beautiful canoe as if it were a lady, and he wished to give it a wreath for adornment.

When he asked for its *quills* to make a



necklace for his beauty, the hedgehog "shot them out like arrows." He had only to gather and stain them with the bright colors Indians know so well how to dye.

Thus the canoe was builded with the lightness of the birch, the toughness of the cedar, the supple threads of the larch, and a splendid necklace of the quills.

Ask now to hear the story as the poem tells it.

XXXI. HOW DOES THE GARDEN GROW?

WHO does not love to have a garden of his own—a little plot of ground shut in from the field or street? How much can be made to grow in it! But it takes learning to make a good garden.

In early springtime the ground is made soft and rich, and divided into little beds and plots so that each thing that is planted may have a place all its own. Narrow paths run between the beds so that things may be cared for and gathered when ready.

Some seeds can be planted as soon as the frost is out of the ground. Some are sown deep and some have only a sifting of earth to cover them. Peas are in rows and corn in hills. Beets, turnips, and lettuce are close together, and beans a little way apart.

Sticks and strings are provided for vines



“Mistress Mary, quite contrary,
How does your garden grow?”

“With silver bells and cockle shells,
And pretty maids all in a row.”

that grow tall but cannot support themselves. If weeds take the liberty to lift up their heads, they are pulled without mercy. The field and roadside should be enough for them.

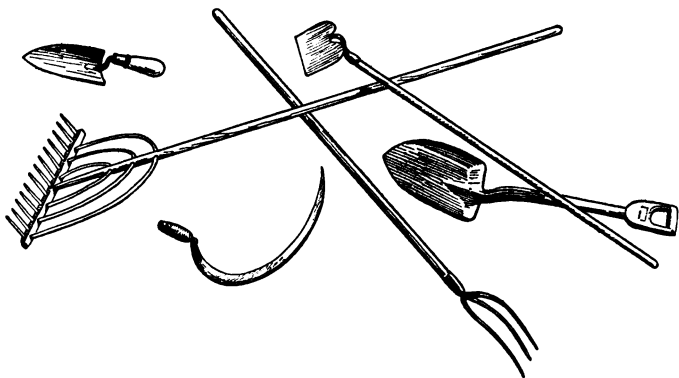
All the family watch the garden; they question when each kind of seed may be expected to send up its shoot. If the season should be dry, some of the beds will be watered.

There comes a warm sunny time, and a watchful eye sees the right sort of shoot coming through the ground and says: "The peas are up!" Soon after come the pretty little blades of corn. Green lines run across the lettuce and beet beds; there are twice as many plants as can find room to grow, and some must be weeded out.

Neighbors and friends compare their gardens, and times are set for beginning to gather one kind of vegetable and another for the table. A part of the pleasure is in watching and waiting.

How we trust Mother Earth when nothing is in sight! How safe it is to trust her! How sure we are that the seeds will make just the kinds of plants they have always made!

What do you think is the secret of the garden in the picture? Could it have been



that earth failed that *one time*? Or was it, perhaps, that little Mistress Mary let the spring days go by and did not sow her seed?

If that were so, when all the other gardens were rich with stores it was too late to have a real garden, and she could only pretend that it was earth and not herself that was "contrary."

XXXII. LEARNING TO WORK

RUDY was now eight years old. His uncle who lived on the other side of the mountains, in the Rhone valley, wished to have the boy with him, so that he might learn something and get on better. His grandfather also thought this was best.

Just at that time two guides were going over the mountains, and Rudy was to go with them. It was a long and hard journey for such a little fellow; but he had a good deal of strength, and courage that never had failed.

There were several to whom he had to bid farewell. First, there was Ajola, the old dog.

"Talking," said Ajola, "has not been much in my line, but now that we shall probably not be able to exchange a word in a long time, I will say a little more than usual.

"A story has been running in my head a

long time. I don't understand it, and you won't understand it either. This much I have made out of it: things are not equal in this world for dogs or men. We are not all born to lie in people's laps or to drink milk. I have not been used to it, but I have seen a little dog traveling in a post chaise and taking the place of a human being.

"The lady who was his mistress, or whose master he was, fed him and offered him sweets. I was running along in the mud at the side of the carriage as hungry as a dog can be, and my thoughts seemed to tell me that things were not quite as they should be."

"Would you like to lie in laps and ride in carriages? I wish you it from the bottom of my heart. But you cannot bring it about by either barking or whining."

Rudy threw his arms about the dog's neck and kissed him heartily on his wet nose.

Then he took the cat in his arms; but he struggled to be free, saying: "You are getting

too strong for me. Climb away over the mountains, for I have taught you how. But never imagine it is possible for you to fall; in this way you will have a sure footing."

With this the cat sprang away.

He also bade farewell to the goats who bleated and wanted to follow him; it was very touching. The swallows flew a little way with him. "We and you! you and we!" they sang.

They soon passed the thicket of alder trees and began to ascend the mountains, close to where the glaciers had loosened themselves from the rock, and they went upon the glacier over the blocks of ice. Rudy crept here and walked there, his eyes sparkling with joy as he placed his firmly tipped mountain shoe wherever he could find footing. Upward, always upward, they went their way. Once or twice, when the men thought it too difficult for so little a boy to mount up, they held out their hands to help him; but he never needed

their assistance, and he stood upon the glacier as if he had been a chamois itself.

In good time he reached the home of his uncle, who was to train him to be a chamois hunter, for he said Rudy had the right stuff in him for it.

He taught him to watch the movements of the chamois when leaping, so that he might always come down firmly on his feet.

He showed him how to hold himself up by his elbows, loins, and legs if there was no footing in the crevice of the rock, and how it was possible even to help by one's neck if necessary.

He told him that the chamois were cunning and had outposts, but that the hunters must be more cunning than they and put them off the scent.

He taught the boy to hold and load and fire a gun; he taught him to know when, on different slopes of the mountains, avalanches were about to fall.

HANS ANDERSEN.

XXXIII. INDUSTRIES

No one must think of living without working. There are a great many industries or employments for you to choose among, but an idle life is out of the question. It would not be a happy one.

When the world was young there were a few great industries,— hunting, for the people who lived near great forests; keeping sheep, for such as lived on high hill slopes; and fishing, for those whose homes were by the sea.

Tilling the soil and rearing cattle must have soon followed, and always there are people who do hard work with their minds.

Next came the craftsmen; what do they do?

We cannot think of anything they do not do; for as soon as a thing is thought about, that is, invented, some one studies out a way to do it; so he becomes that kind of a craftsman, or manufacturer.

The simple crafts are those that shape material for use. Indian arrowheads shaped roughly in stone, vessels for cooking and holding, and, alas, weapons for fighting are among the earliest things.

From these beginnings come the carpenters, stonecutters, machinists, and all the great army of craftsmen and artists.



It was a great day when men learned to work with *fire*. Melting and mixing have added new materials, such as glass, brass, bronze, aluminum, nickel, etc.

Very hot fire is needed for making gold, silver, iron, and copper into things that can be used. To get these materials men have bored down deep into the earth and worked long and hard with brain and hands.

Do you wonder why grown people may not do as children do, working when they please? If you were to ask, there would be two answers. One might say: "I have a dear family at home; I must work to take care of them." Another might answer: "This work must be done."

Some like to go to sea, some to trade, some



to invent and make, and some to till the land. The more skill the workman has, the better and happier his work. A good head to think, a good eye to see, a good hand to do, makes a skilled workman. A willing heart and patient mind makes a happy one.

How many employments are shown in the pictures? In what way would you like to help in the world's work?

XXXIV. ABOUT MONEY

AT the time when our baby needed its first pair of shoes it so happened that a hundred or more other somebodies in different homes



also wanted shoes. And there were people who, without knowing these babies at all, were making and selling the very kind of babies' shoes.

When the time came for a carriage to ride about in, there had been carriages made that just suited the parents of the baby.

So it was with everything that was needed to eat, drink, or wear. There were more things, indeed, than the mother could buy, though she would have liked them.

It took *money* to get the things, and money must be earned before it could be spent. She told her little man that by and by he would

have to earn money and buy her everything she wanted. And he answered "Yes," but did not comprehend.

This makes us think about money and how we come to need it.

The father of the baby was working every day, but he was not making shoes. He did not know how to do that. He took care of a greenhouse, perhaps, so that all who wished might buy plants and flowers.

But flowers would not cover the baby's feet and keep them warm; and he had no time to go and look for a person who made shoes and would exchange them for flowers.

So he was given money for his work, and it could be *exchanged* for shoes and carriage and toys, but not till some was left after he had looked out for food and shelter, which were greater needs.

Then the shoeman could, if he liked, take the money to the florist and buy flowers. Perhaps he needed it to get leather for more

shoes, and so it was the leather merchant that got the flowers. Perhaps that money never got back to the florist, and yet it was raising the flowers that bought the shoes.

The ten-cent piece you have to-day may have gone through many hands since it left the government mint, where it was made and had its value stamped upon it.

Copper, nickel, silver, and gold are used to make coins. Where are these found?

What do people use to pay large bills?

Why should any one be willing to take a piece of printed paper in exchange for a pair of shoes, a coat, a hat, a day's work?

What promise is written on the paper note?

Who makes the promise, and where is the coin kept to make it sure the paper money is worth the sum written upon it?

XXXV. A SOCIAL WORLD

A CHILD soon learns to walk and run. It finds new uses for its hands and fingers every day.

What does it want of *the earth* now?

It must be a playground for him and the other somebodies he learns to know. Soon he goes to school and to church.

When older people played with him they did very much as he wished. He had things his own way. Now each of the other children wants his way just as much. Then something happens. Our little friend is called a naughty boy. He has to be taught that if he wants his own way all the time he must play alone.

He is a social little fellow and would not like that. It would not be good for him if he did. Every one who comes to live in the world must learn to live with others.

He must be willing *to take turns, to wait, to obey, and to show kindness.*

All this he holds by a Golden Rule.

To do to others as I would
That they should do to me
Will make me always kind and good,
As children ought to be.

Again our little fellow is called a naughty boy, and he cries as if he were abused.

The children say he has told a lie. They mean that he has said something that he knows is not so. All the children seem to know that this is wrong. He would not cry so if he were sure he had been a manly boy.

His mother has to make him see that even if he lives and plays alone he must be true. If he says yes for no, his word will not mean anything. Others will not trust him; he will not trust himself.

Truth and right are the heart of everything, and nothing goes well without *love*.

XXXVI. OTHER SOMEBODIES

THERE was a certain country where things used sometimes to go oddly. You could never tell whether it was going to rain or hail, or whether the milk was going to turn sour. It was impossible to say whether the next baby would be a boy or a girl, or whether, even after he was a week old, he would wake sweet-tempered or cross.

In this country of uncertainties it came to pass one day that in the midst of a shower of rain that might well be called golden, seeing that every drop was good for a grain of golden corn, or a buttercup, or a dandelion at least,—while this splendid rain was falling with a musical patter on the leaves of trees and on a multitude of flowers, and washing all the motes and bad odors and poisons out of the air,—something happened.

It was not a great battle, nor an earthquake, but something more important. *A baby girl was born*: her father was a king, and her mother was a queen, and her uncles and aunts were princes and princesses, and her cousins were dukes and duchesses. So the little girl was Somebody; and yet for all that the first thing she did was to cry. I told you it was a strange country.

As she grew up, everybody did his best to convince her that she was Somebody, and the girl herself was so easily persuaded of it that she quite forgot that anybody had ever told her so; and the worst of it was that the princess never thought of there being more than *one* somebody, and that was *herself*!

Far away to the north, on the side of a bleak hill, where there were no meadows rich with buttercups, only steep, rough, breezy slopes, covered with the dry prickly furze and its flowers of red gold, or moister, softer broom with its flowers of yellow gold, and

great sweeps of purple heather, mixed with bilberries and cranberries,—while the same cloud that was dropping down golden rain all about the queen's baby was dashing huge handfuls of hail upon the hills,—there among the hailstones and the heather another little girl was born, whom the shepherd her father and the shepherdess her mother, and a good many of her kindred too, thought Somebody. And yet (would you believe it) she cried the first thing. It was an odd country.

And what was still more surprising, the shepherd and shepherdess, and the dairymaids and laborers, were not a bit wiser than the king and queen and the princes and dukes; for they, too, taught the little woman so constantly that she was Somebody, that she also forgot that there were a great many more somebodies beside herself in the world.

GEORGE MACDONALD.

XXXVII. THE HUMAN FAMILY

I DID not tell you to what part of the world our little child came.

That was because the things it had to have would be the same everywhere. What were they?

Air, sunshine, solid earth, water, food, clothing, shelter.

There are two more: *love* and *care*.

It might have come right in our very midst, as happens every little while. Then it would have been an American. We think that would have been fortunate.

Or, suppose it had been across the sea in England, Scotland, or Ireland. Some little ways it would have that belong to the country where it grew up.

If for good and pretty it said *bon* and *joli*, perhaps it was France to which it came. If

it said *grazia* for "thank you," we will guess it was sunny Italy; and if Germany had been its home, we might have heard it saying *Vater und Mutter* instead of father and mother.

These are little things; the great ones are the same for all.

Because of this, people understand and feel for each other. If by fire or famine, or any dreadful sickness or calamity, numbers of people are deprived of the *necessaries of life*, those who have abundance share with them.

This is what we call *humanity*; it means that the nations of the earth make one great family. As soon as this is understood and felt the Golden Rule will reach around the earth and wars and quarrels will cease.

And Abram said unto Lot, Let there be no strife between me and thee, and between my herdsmen and thy herdsmen; *for we are brethren*. Is not the whole land before thee? If thou wilt take the left hand, then I will go to the right; or if thou take the right hand, then I will go to the left. — GENESIS xiii. 8-9.

XXXVIII. LESSON FOR A CHILD

THERE breathes not a breath of morning air,
But the Spirit of Love is moving there;
Not a trembling leaf on the shadowy tree
Mingles with thousands in harmony,
But the Spirit of God doth make the sound,
And the thoughts of the insect that creepeth around;
And the sunshiny butterflies come and go,
Like beautiful thoughts moving to and fro;
And not a wave of their busy wings
Is unknown to the Spirit that moveth all things.
And the long-mantled moths that sleep at noon,
And dance in the light of the mystic moon,
All have One Being that loves them all;
No fly in the spider's web can fall,
But He cares for the spider and cares for the fly;
And He cares for each little child's smile and sigh.
How it can be I cannot know;
He is wiser than I and it must be so.

GEORGE MACDONALD.

XXXIX. GIFTS LAID UP

I HEARD a little while ago of a girl at college whose dress began to look worn and shabby. What do you think was done about it?

She took a vacation and went home. With her own hands she sheared a sheep and washed, combed, spun, and wove the wool into cloth. Then with scissors, thread, and needle she made a pretty, shapely dress and wore it back to school, where she made up her lost time by harder study. If I were you, I would give three cheers for the brave Kentucky girl who helped herself so well.

The gift we are to study now took a great deal of *time*. Let us note some of the steps.

When the fire burns low in the stove some one goes to the cellar and brings from the bin a hod of coal. Long, long ago, so long that no human being was there to remember it, the

coal was in a deeper cellar, hidden away in the ground.

Do you ask who could have placed it there? And do you wonder how any one knows, if no persons had come to earth to live?

We know first because it is found there, and it tells the story itself. It was done through many earth and sky helpers, each obeying its own laws,— laws given by Him who made all things.

The sun was the same wonderful provider of light and heat that it is now.

On earth were great reaches of marsh land, and on it grew dense forests of giant trees. With so much light, heat, and moisture, they grew so thickly as almost to shut out light among their branches.

When one after another the trees came to the end of their lives, there was nothing for them but to fall where they had stood, and settle into the wet bog in which they had grown. Decaying, they made what we call

peat; it will burn like wood only not so brightly.

A tree may rise, a tree may fall,
The forest overlives us all.

Do you see that in time the marshy bottom would get packed with the trunks, branches, and leaves, pushing aside the soft earth and decaying in it until no more trees could find room to grow?

The next chapter of the story is of great and dreadful floods. These marsh lands became ponds. The floods brought sand and clay and sometimes lime to places where they had not been, and little by little whole forests and fields were buried.

After the waters flowed away and left the loose soil they had brought, the seeds in it waked and grew, till new foliage clothed the spots that had had such mighty happenings.

Earthquakes and volcanoes tore the earth, lifting one part and sinking another.

In good time men came to live upon the earth. They found plenty of everything they

needed, and cut down wood to build fires and cook their food. Just when careful ones were saying that the trees were being cut faster than they could grow, and that sometime there would be none for fuel, *black, hard rock that would burn* was found underground.

Some one had discovered a *coal* mine, and there was a new fuel to burn.

The coal, the sandstone, the limestone, and the floods told their separate stories. Prints of leaves were found in the hard coal, showing what the trees had been like. In the pressed sand and lime were shells and fossils, and layers of stone on the top of the coal told of terrible times in earth and sky.

So all the stories agree that it has been in this way that Mother Earth has been made ready for the use we are making of it.

Think sometimes when you see coal how many ways and doings of mankind are made possible by means of it.

XL. MINES AND QUARRIES

BEDS of coal reach down deep into the earth. Beds of sandstone and limestone rest upon them sometimes and have to be cut through.

The miners working with pick and shovel make great galleries or passages underground. It may be a mile or more from the place where the miner is working, shut away from sight and sound of life above ground, to his home near the opening of the shaft. He is let down in a car or basket, with only the light in his cap to show him where he is to work.



We are very dependent upon these brave toilers; let us not forget to be grateful. In other mines men seek for iron, gold, copper, and the precious stones we call jewels and gems.

There is hardship and danger in the lives of those who bring coffee, tea, spices, and other luxuries from the far East; but it is often easier and safer to go a thousand miles by railway or steamship than to go one mile down in the heart of the earth, not knowing what may happen to cut off supplies of air, or to close up the way back to the shaft. This is a part of the price of coal.

Stones for buildings are for the most part cut in quarries open to light and air. You who are reading these stories are not too young to begin to make a collection of minerals.

Watch the roadmakers and see how fragments of rock are ground to powder. It is not so easy to see how powdered rock came to be made solid rock again; but every bit of sandstone has been through both. Many kinds of rock tell of terrible fires that have melted them.

Try to find out the stories of granite, quartz, limestone, marble.

XLI. OLD WAYS AND NEW

THERE are among you, perhaps, children who live in large apartment houses, or board at hotels where there are rooms for several hundred people. I dare say you think the fashion quite a modern one.

This lesson is to tell you of homes that were lived in before any of your cities or towns were built, before Columbus began to think there *might be* a "new world" across the sea.

The town builders of that time did not know of the part of the world Columbus lived in; their homes were in what we now call Arizona and New Mexico.

They were not wigwams or tepees, but great apartment houses of clay or stone with thick, high walls. Ruins of these can still be seen in very perfect condition. One of them is six

stories high and covers several acres of ground. Another is built around an open square with no windows on the outside. This looks as if the houses were forts. In these outer walls are holes which the Pueblos used to shoot arrows through.

There are ruins which show homes for a whole community. The second story stands back a little from the first, and the third and fourth still farther back, making the wall look like a terrace. Stairs were on the outside and could be taken up in case of danger. The people could walk on the narrow terraces all about the town without going down to the ground at all.

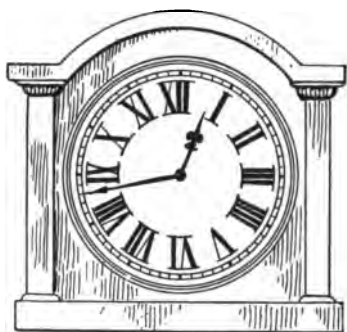
In the best of these homes a wash was made of gypsum which made the walls smooth and white.

These Pueblos had other beautiful and useful arts. When you visit a great museum look for their arrowheads of flint tipped with sharp agate, and their rugs, baskets, and ornaments.

XLII. A GIFT OF THE SKY

A LITTLE school child in New York or Chicago, or anywhere else, if asked "What time is it?" would go and look at a *clock*; if there was no clock or watch at hand, the child would say "I do not know," and think no more about it.

What would an Indian child, or an Eskimo, or Alaskan, who had no timekeeper do?



Most such people have a good idea of time. How do they get it?

Instead of the face of the clock they have the face of the sky.

The sky is the real timekeeper. Clocks have been used only a few hundred years, and

it is a short time since they could be bought so cheaply that every family could own one.

When we have the best way for anything we forget other good ways.

Each of you can tell when it is noon by your shadow; and the place in the sky where the sun is tells whether the morning or afternoon is half gone.

The sky does more than mark the time of day; it shows the time of year, but that is partly the night sky, and it takes much study to learn to read it. Shepherds on the mountain sides who care for their flocks by night grow very wise about the face of the sky. Sailors read the sky and steer their courses by it.

The creation story says:

"Let there be lights in the firmament of heaven to divide the day from the night; and let them be for signs, and for *seasons*, and for *days*, and for *years*."

Men measure the time and give names to little portions as well as large ones, and make

clocks to match the seconds, minutes, and hours, so that you and I can use time without much wasting.

There are other simple ways to measure the passing moments. Did you ever use an hour-glass, or a little three-minute glass, such as is used to boil eggs by? This shows what we might have done if we had not had clocks.

How many things can you name that come once, twice, four times, twelve times, three hundred sixty-five times a year?

How nearly can you judge of a minute, five minutes, half an hour?

How many times a day do you need to know what time it is?

What do you think this gift is worth compared with the others we have studied?

XLIII. AFTER NINETY YEARS

WE have come to the place where we must say "Good-by" to the little child we have called ours while we have read this book.



It has grown to be a school child about as old as you, and has learned a great deal about the things of earth and sky.

Suppose for a moment that it is the little fellow in this picture, and that the dear old man is his grandpapa.

The old gentleman has lived a long, long life. He is ninety years old, and it is still pleasant for him to live.

He remembers things that happened when he was no older than this boy, as if they had happened only a day or two ago.

He often sits and thinks how many changes he has seen! There were no steamboats or railways when he was young. In his boyhood candles or lamps filled with oil lighted the houses, and gas and electric lights were not known.

Our country was not half its present size, and where some of us live Indians roamed and hunted, or forests grew.

Things sold in shops and used in homes have multiplied since his childhood. He looks back upon his ninety years and wonders if his grandson will see as great changes in his lifetime.

The boy loves to hear stories of the past and means to remember them. He thinks he will tell them to his children, and to their children. This is the way history began.

The old man has lived a useful life. Now he is being loved and cared for as he was at the beginning of his life. He knows that the body he has builded and worn cannot serve him long, but he is sure that he shall go on living in a better way.

A time will come when his life on earth will end, but the boy will remember him as long as he lives. We hope he also will be a good, true, useful man.

If you who have learned the lessons of this book will look in earth and sky for something beautiful, think something loving, and do something useful each day, your lives will be sure to be happy and noble.



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